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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/672,895	09/26/2003	Mira Ben-Tzur	10002.000810 (PM02006-2)	9562
31894	7590	05/11/2004		EXAMINER
OKAMOTO & BENEDICTO, LLP P.O. BOX 641330 SAN JOSE, CA 95164			NGUYEN, TUAN H	
			ART UNIT	PAPER NUMBER
			2813	

DATE MAILED: 05/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/672,895	BEN-TZUR ET AL.	
	Examiner Tuan H. Nguyen	Art Unit 2813	<i>AN</i>

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM  
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 26 September 2003.  
 2a) This action is FINAL. 2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 13,15-19 and 21-26 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 13,15-19, 21-26 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
 Paper No(s)/Mail Date 12/29/03.

4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date. \_\_\_\_\_.  
 5) Notice of Informal Patent Application (PTO-152)  
 6) Other: \_\_\_\_\_.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in—

- (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
- (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claims 13,16,18, 22, 23, 24, 25 are rejected under 35 U.S.C. 102(e) as being anticipated by Allman et al..

See Allman et al.. figs. 1-2 and related text on col. 2-3 which discloses the claimed integrated circuit structure including a last metal level 28 comprising a plurality of metal lines over a first dielectric layer 26; a passivation level comprising a low-k dielectric layer 30, 34 substantially filling space extending between metal lines 28 (fig. 2, col. 2, lines 25-63). The low-k dielectric 30, 34 filling more than about 50% of a distance between a sidewall of a metal line and a sidewall of an adjacent metal line in the plurality of metal lines 28.

With respect to claims 16, 22, 24, it is well-known that low-k dielectric material having dielectric constant of less than 3.9.

With respect to claim 25, fig. 2 shows low-k dielectric layer 30, 34 is directly on the first dielectric 26.

Claims 13, 15-19, 21-26 are rejected under 35 U.S.C. 102(e) as being anticipated by Bohr.

See Bohr, figs. 2a-2i and related text on col. 3-6 which discloses the claimed structure in an integrated circuit including a last metal level 208; and a passivation level comprising a low-k dielectric 212 substantially fills a space between metal lines 208 in the last metal level for reducing the capacitive coupling between the conductors which in turns, reducing propagation delay of the signal (figs. 2a-2c and col. 3, lines 29 to col. 4, line 67).

With respect to claims 15, 21, 26, figs. 2e-2f show the passivation level further comprises a layer of dielectric 216 over the low-k dielectric 212 and a topside material 218 over the layer of dielectric 216 (col. 5, second and third paragraph).

With respect to claims 16, 22, 24, see col. 4, fourth paragraph for the low-k having dielectric constant of less than or equal 4.

With respect to claims 17, 19, see col. 3, lines 45-47 which discloses the metal thickness of between 1-3 microns which is within the claimed range.

With respect to claim 25, see col. 3, lines 13-21 wherein outer most surface of substrate 200 including insulating layer.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Lou, Chang et al., Cha et al., Wong et al., and Coffman disclose the use of low-k dielectric material between aluminum metal lines for reducing RC constant.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan H. Nguyen whose telephone number is 703-308-2550. The examiner can normally be reached on 9AM-5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead Jr. can be reached on 703-308-4940. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.



Tuan H. Nguyen  
Primary Examiner  
Art Unit 2813

TN  
May 6, 2004